

Claims

- [c1] 1. A rotation apparatus for connecting a first body to a second body, comprising:
a sleeve having one end including a stopper and an outer wall including screw threads;
a retaining means for engaging with said sleeve;
a first base connected to the first body above the retaining means, wherein the first base has a first opening;
and
a second base connected to the second body above the first base, wherein the second base has a second opening, the second opening has a shape that matches the outer wall of the sleeve;
wherein the sleeve passes through the first opening of the first base and the second opening of the second base and screws into the retaining means so that the sleeve is able to rotate by moving the second base.
- [c2] 2. The rotation apparatus of claim 1, wherein the outer wall of the sleeve further comprises a transmission flat.
- [c3] 3. The rotation apparatus of claim 1, wherein the outer wall of the sleeve further comprises a transmission slot.

- [c4] 4. The rotation apparatus of claim 1, wherein the screw threads on the outer wall of the sleeve are located one end far away from the stopper.
- [c5] 5. The rotation apparatus of claim 1, wherein the structure further comprises a rotation-limiting ring located between the first base and the second base, the first base furthermore comprises a protruding pin, the outer edge of the rotation-limiting ring has a pair of engaging means for engaging with the protruding pin, the inner edge of the rotation-limiting ring has a profile that matches the outer wall of the sleeve, and the sleeve passes through the rotation-limiting ring so that the rotation-limiting ring can rotate when driven but the angular movement is limited by the engaging means.
- [c6] 6. The rotation apparatus of claim 1, wherein the structure further comprises a buffering element between the first base and the retaining means, the buffering element having:
a first buffering ring slid into the sleeve, wherein the inner edge and the outer edge of the first buffering ring lie in different planes; and
a second buffering ring slid into the sleeve, wherein the inner edge and the outer edge of the second buffering ring lie in different planes such that the outer edge of the first buffering ring is in contact with the outer edge

of the second buffering ring and the inner edge of the first buffering ring separates from the inner edge of the second buffering ring by a gap.

[c7] 7. The rotation apparatus of claim 6, wherein the structure further comprises a first pad ring located between the buffering element and the retaining means, the inner edge of the first pad ring has a profile that matches the outer wall of the sleeve and the first pad ring slides into the sleeve so that the first pad ring is able to follow the rotation of the sleeve.

[c8] 8. The rotation apparatus of claim 6, wherein the structure further comprises a latching ring located between the first base and the buffering element, the inner edge of the latching ring has a profile that matches the outer wall of the sleeve, the latching ring slides into the sleeve so that the latching ring is able to follow the rotation of the sleeve, the first base further has at least a latching slot located somewhere in the peripheral region around the first opening and the latching ring has at least a bump on a surface close to the first base that can click into the latching slot.

[c9] 9. The rotation apparatus of claim 8, wherein the structure further comprises a second pad ring located between the first base and the latching ring, the inner edge

of the second pad ring has a profile that matches the outer wall of the sleeve so that the second pad ring is able to follow the rotation of the sleeve.

[c10] 10. The rotation apparatus of claim 8, wherein the structure further comprises a third pad ring located between the latching ring and the buffering element, the inner edge of the third pad ring has a profile that matches the outer wall of the sleeve so that the third pad ring is able to follow the rotation of the sleeve.

[c11] 11. The rotation apparatus of claim 1, wherein the structure further comprises a pivot locked onto the second base with the axle line of the pivot positioned in a direction perpendicular to the axle line of the sleeve.

[c12] 12. The rotation apparatus of claim 11, wherein the pivot and the second base are formed together as an integrative unit.

[c13] 13. The rotation apparatus of claim 11, wherein the structure further comprises a pivot base coupled to the pivot.

[c14] 14. A rotation apparatus for connecting a first body to a second body, comprising:
a sleeve having one end including a stopper and an outer wall including screw threads;

a retaining means for engaging with said sleeve;

a buffering element located above retaining means, having

a first buffering ring slid into the sleeve, wherein the first buffering ring has an inner edge and an outer edge that lie on different planes; and

a second buffering ring slid into the sleeve, wherein the second buffering ring has an inner edge and an outer edge that lie on different planes, wherein the outer edge of the first buffering ring and the outer edge of the second buffering ring are in contact and the inner edge of the first buffering ring and the inner edge of the second buffering ring are separated by a gap;

a latching ring located above the buffering element;

a first base connected to the first body above the latching ring, wherein the first base has a first opening;

a rotation-limiting ring located above the first base; and

a second base connected to the second body above the rotation-limiting ring, wherein the second base has a second opening, wherein the inner edge of the latching ring and the inner edge of the rotation-limiting ring have a shape that matches the outer wall of the sleeve;

wherein the sleeve passes through the buffering element, the latching ring, the first opening of the first base, the rotation-limiting ring and the second opening of the second base and screws into the retaining means

so that the sleeve, the latching ring and the rotation-limiting ring are able to rotate together via any movement in the second base.

- [c15] 15. The rotation apparatus of claim 14 wherein the outer wall of the sleeve further comprises a transmission flat.
- [c16] 16. The rotation apparatus of claim 14, wherein the outer wall of the sleeve further comprises a transmission slot.
- [c17] 17. The rotation apparatus of claim 14, wherein the screw threads on the outer wall of the sleeve are located one end far away from the stopper.
- [c18] 18. The rotation apparatus of claim 14, wherein the first base further comprises a protruding pin and the outer edge of the rotation-limiting ring has a pair of engaging means for engaging with the protruding pin so that the rotation-limiting ring can rotate when driven but the angular movement is limited by the engaging means.
- [c19] 19. The rotation apparatus of claim 14, wherein the first base further comprises at least a latching slot located somewhere around the peripheral region of the first opening and the latching ring has at least a bump on a surface close to the first base for clicking into the latching slot.

[c20] 20. The rotation apparatus of claim 14, wherein the structure further comprises a first pad ring located between the buffering element and the retaining means such that the inner edge of the first pad ring has a profile that matches the outer wall of the sleeve and the first pad ring slides into the sleeve so that the first pad ring is able to follow the rotation of the sleeve.

[c21] 21. The rotation apparatus of claim 14, wherein the structure further comprises a second pad ring located between the first base and the latching ring, the inner edge of the second pad ring has a profile that matches the outer wall of the sleeve so that the second pad ring is able to follow the rotation of the sleeve.

[c22] 22. The rotation apparatus of claim 14, wherein the structure further comprises a third pad ring located between the latching ring and the buffering element, the inner edge of the third pad ring has a profile that matches the outer wall of the sleeve so that the third pad ring is able to follow the rotation of the sleeve.

[c23] 23. The rotation apparatus of claim 14, wherein the structure further comprises a pivot locked onto the second base with the axle line of the pivot positioned in a direction perpendicular to the axle line of the sleeve.

[c24] 24. The rotation apparatus of claim 23, wherein the pivot and the second base are integrally formed.

[c25] 25. The rotation apparatus of claim 23, wherein the structure further comprises a pivot base coupled to the pivot.

[c26] 26. A portable electrical appliance, comprising:
a host body;
a display panel;
a rotation apparatus connecting the edge of the display panel to the edge of the host body, having:
a sleeve with one end having a stopper and a plurality of screw threads on the outer wall of the sleeve;
retaining means for engaging with said sleeve;
a first base connected to the host body above the retaining means, wherein the first base has a first opening;
a second base connected to the display panel above the first base, wherein the second base has a second opening;
a pivot locked onto the second base such that the axis of the pivot is perpendicular to the axis of the sleeve; and
a pivot base coupled to the pivot, wherein the sleeve passes through the first opening of the first base and the second opening of the second base and screws into the retaining means, wherein the sleeve is able to rotate

when driven by the second base.

- [c27] 27. The portable electrical appliance of claim 26, wherein the outer wall of the sleeve further comprises a transmission flat.
- [c28] 28. The portable electrical appliance of claim 26, wherein the outer wall of the sleeve further comprises a transmission slot.
- [c29] 29. The portable electrical appliance of claim 26, wherein the screw threads on the outer wall of the sleeve are located one end far away from the stopper.
- [c30] 30. The portable electrical appliance of claim 26, wherein the rotation apparatus further comprises a rotation-limiting ring located between the first base and the second base, the first base further comprises a protruding pin, the outer edge of the rotation-limiting ring has a pair of engaging means for engaging with the protruding pin, the inner edge of the rotation-limiting ring has a profile that matches the outer wall of the sleeve, and the sleeve passes through the rotation-limiting ring so that the rotation-limiting ring can rotate when driven but the angular movement is limited by the engaging means.
- [c31] 31. The portable electrical appliance of claim 26, wherein the rotation apparatus further comprises a

buffering element between the first base and the retaining means, the buffering element having:
a first buffering ring slid into the sleeve, wherein the inner edge and the outer edge of the first buffering ring lie in different planes; and
a second buffering ring slid into the sleeve, wherein the inner edge and the outer edge of the second buffering ring lie in different planes such that the outer edge of the first buffering ring is in contact with the outer edge of the second buffering ring and the inner edge of the first buffering ring separates from the inner edge of the second buffering ring by a gap.

[c32] 32. The portable electrical appliance of claim 31, wherein the rotation apparatus further comprises a first pad ring located between the buffering element and the retaining means, the inner edge of the first pad ring has a profile that matches the outer wall of the sleeve and the first pad ring slides into the sleeve so that the first pad ring is able to follow the rotation of the sleeve.

[c33] 33. The portable electrical appliance of claim 31, wherein the rotation apparatus further comprises a latching ring located between the first base and the buffering element, the inner edge of the latching ring has a profile that matches the outer wall of the sleeve, the latching ring slides into the sleeve so that the latch-

ing ring is able to follow the rotation of the sleeve, the first base furthermore has at least a latching slot located somewhere in the peripheral region around the first opening and the latching ring has at least a bump on a surface close to the first base that can click into the latching slot.

[c34] 34. The portable electrical appliance of claim 33, wherein the rotation apparatus further comprises a second pad ring located between the first base and the latching ring, the inner edge of the second pad ring has a profile that matches the outer wall of the sleeve so that the second pad ring is able to follow the rotation of the sleeve.

[c35] 35. The portable electrical appliance of claim 33, wherein the rotation apparatus further comprises a third pad ring located between the latching ring and the buffering element, the inner edge of the third pad ring has a profile that matches the outer wall of the sleeve so that the third pad ring is able to follow the rotation of the sleeve.

[c36] 36. The portable electrical appliance of claim 26, wherein the pivot and the second base are formed together as an integrative unit.